
The *Nonindigenous Aquatic Species Program* tracks the distribution and status of introduced aquatic organisms and provides this information in a timely manner for research, management, and education.

Nonindigenous species are ranked second only to habitat loss in the causes that threaten native biodiversity. The geographic distribution of many of these introduced organisms are poorly understood, and as new species are introduced and the range of those previously established continues to increase, precise tracking of their status and distribution is imperative for decision-making and resource management.

The Nonindigenous Aquatic Species Program (NAS) offers a relevant program to detect, monitor, conduct research, and promote public education on invasive species. Likewise it meets a science priority of the U.S. Geological Survey (USGS) by determining the status of biological resources in aquatic systems. An expansive spatial database underlies the NAS program, which has been under development since 1978. It supports the underlying role of the NAS program, which is to provide a continual national assessment of the status and distribution of nonindigenous aquatic species.



The red-eared slider, common in the pet trade, is now established in outside its native range due to owners releasing their pets.

The NAS database functions as a repository and central clearinghouse for occurrence information from across the country. It contains locality information on more than 1100 species introduced as early as 1765. Vertebrates, invertebrates, and vascular plants are tracked. Organisms include foreign species as well as those native to North America that have been



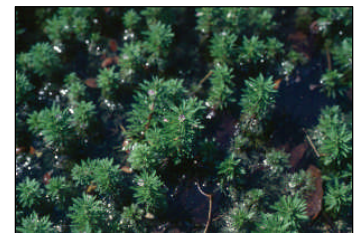
The Chinese mitten crab, a new invader to Chesapeake Bay.

transported outside of their natural range. Locality data is obtained from many sources including the literature, state, federal and local monitoring programs, natural history museum accessions, on-line databases, professional communications and public reporting forms. Before including in the database, records are critically reviewed then geographically referenced to the finest USGS hydrologic (water) unit codes in order to correlate locality data with river drainage. USGS hydrologic units are commonly employed by natural resource agencies for referencing many types of environmental data, physical as well as biological, and implemented for management at the watershed level.

The NAS Program website (<http://nas.er.usgs.gov>) provides immediate access to new occurrence records through a real-time interface with the NAS database. Website users can perform automatic queries to obtain lists of species according to state or hydrologic unit of interest. Fact sheets, distribution maps, and news on new occurrences are continually posted and updated. Staff may be contacted for specific data, custom products and reports. The NAS website also provides information on reports, meetings, and links to relevant sites.

Program Goals

- 1) Develop and provide an accurate ongoing assessment of the status and distribution of nonindigenous aquatic species nationwide.
- 2) Identify geographic gaps in knowledge of the distribution of introduced aquatic organisms.
- 3) Gain an understanding of the scope and scale of aquatic introductions in the United States.



Hydrilla, a popular aquarium plant

Applications of the NAS Program

- **Maps** – Maps illustrate the dynamics of a non-native species' distribution through time.
- **Risk Assessment** – Analysis of distribution records has been instrumental in developing state legislation on prohibited species.
- **Predicting Spread** – Determined distribution of established species might be used in estimating the potential spread of new species with similar origin or biological attributes.
- **Pathway analysis** – Methods or pathways of introduction include intentional and unintentional stocking, pet and aquarium releases, ship ballast water, bait bucket release, and escape from aquaculture or captivity.
- **Publications** - products include peer-reviewed scientific papers, books, book chapters, fact sheets, and new invasive species notices.



Northern snakehead (*Channa argus*)

Nonindigenous Aquatic Species Database Facts

- Nonindigenous species have been recorded from nearly every aquatic environment in the United States.
- There are nearly 1200 freshwater and 600 marine aquatic animals and plants that have been found outside their native range in the US, including over 600 species of freshwater fish.
- Just over 800 aquatic species present in the US are from foreign countries of which nearly 300 are fish species.
- Zebra mussels can be found in 473 lakes outside the Great Lakes region.
- The common carp was introduced in the United States in 1831 from Asia.
- The brown trout is actually a native of Europe and was introduced here in 1883.

For more information, contact:

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**U.S. Geological Survey
Florida Integrated Science Center
7920 NW 71st Street
Gainesville, FL 32653
352-378-8181
<http://nas.er.usgs.gov>**